



**[4910-13]**

## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 25**

**Docket No. FAA-2012-0343; Notice No. 25-460-SC**

**Special Conditions: Airbus, A350-900 Series Airplane; Crew Rest Compartments.**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Notice of proposed special conditions.

**SUMMARY:** This action proposes special conditions for Airbus A350-900 series airplanes.

These airplanes will have novel or unusual design features associated with two separate Crew Rest Compartments: a Flight Crew Rest Compartment (FCRC) intended to be occupied by flight crew members only, and a Cabin Crew Rest Compartment (CCRC) intended to be occupied by cabin crew members. Both types of Crew Rest Compartments (CRC) are installed in the overhead area with access from the main deck. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature. These proposed special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

**DATES:** We must receive your comments by **[insert a date 45 days after date of publication in the Federal Register]**.

**ADDRESSES:** Send comments identified by docket number FAA-2012-0343 using any of the following methods:

- Federal eRegulations Portal: Go to <http://www.regulations.gov/> and follow the online instructions for sending your comments electronically.
- Mail: Send comments to Docket Operations, M-30, U.S. Department of Transportation (DOT), 1200 New Jersey Avenue, SE, Room W12-140, West Building Ground Floor, Washington, D.C., 20590-0001.
- Hand Delivery or Courier: Take comments to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE, Washington, D.C., between 8 a.m. and 5 p.m., Monday through Friday, except federal holidays.
- Fax: Fax comments to Docket Operations at 202-493-2251.

Privacy: The FAA will post all comments it receives, without change, to <http://www.regulations.gov/>, including any personal information the commenter provides. Using the search function of the docket web site, anyone can find and read the electronic form of all comments received into any FAA docket, including the name of the individual sending the comment (or signing the comment for an association, business, labor union, etc.). DOT's complete Privacy Act Statement can be found in the Federal Register published on April 11, 2000 (65 FR 19477-19478), as well as at <http://DocketsInfo.dot.gov/>.

Docket: Background documents or comments received may be read at <http://www.regulations.gov/> at any time. Follow the online instructions for accessing the docket or go to the Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE, Washington, D.C., between 9 a.m. and 5 p.m., Monday through Friday, except federal holidays.

**FOR FURTHER INFORMATION CONTACT:** Jeff Gardlin, FAA, Airframe/Cabin Safety, ANM-115, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue SW., Renton, Washington, 98057-3356; telephone (425) 227-2136; facsimile (425) 227-1320.

**SUPPLEMENTARY INFORMATION:**

**Comments Invited**

We invite interested people to take part in this rulemaking by sending written comments, data, or views. The most helpful comments reference a specific portion of the special conditions, explain the reason for any recommended change, and include supporting data. We ask that you send us two copies of written comments.

We will file in the docket all comments we receive, as well as a report summarizing each substantive public contact with FAA personnel concerning these special conditions. You can inspect the docket before and after the comment closing date. If you wish to review the docket in person, go to the address in the ADDRESSES section of this preamble between 7:30 a.m. and 4:00 p.m., Monday through Friday, except Federal holidays.

We will consider all comments we receive on or before the closing date for comments. We will consider comments filed late if it is possible to do so without incurring expense or delay. We may change these special conditions based on the comments we receive.

If you want us to acknowledge receipt of your comments on this proposal, include with your comments a self-addressed, stamped postcard on which you have written the docket number. We will stamp the date on the postcard and mail it back to you.

**Background**

On August 25, 2008, Airbus applied for a type certificate for their new A350-900 series airplane. Later, Airbus requested and the FAA approved an extension to the application for FAA type certification to June 28, 2009. The A350-900 series has a conventional layout with twin wing-mounted Rolls Royce Trent engines. It features a twin aisle 9-abreast economy class layout, and accommodates side-by-side placement of LD-3 containers in the cargo compartment. The basic A350-900 series configuration will accommodate 315 passengers in a standard two-class arrangement. The design cruise speed is Mach 0.85 with a Maximum Take-Off Weight of 591,000 lbs. Airbus proposes the A350-900 series to be certified for extended operations (ETOPS) beyond 180 minutes at entry into service for up to a 420-minute maximum diversion time.

Crew rest compartments have been previously installed and certificated on several Airbus airplane models (as well as those of other manufacturers) in various locations including the main passenger seating area, and the overhead space above the main passenger cabin seating area. In each case, the FAA determined that the applicable Title 14 Code of Federal Regulations (14 CFR) sections did not provide all of the necessary requirements because each installation had unique features by virtue of its design, location, and use on the airplane. When the FAA finds that the applicable airworthiness regulations do not contain adequate or appropriate safety standards because of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16. The special conditions contain safety standards that the FAA considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

The FAA has previously written special conditions to address crew rest compartment installations in various locations for various models. These special conditions have been very similar in content, but the particular details of a given installation have resulted in differences between the actual special conditions. The FAA has used the experience gained over time from prior special conditions to refine and enhance the special conditions proposed in this special condition. In the case of the A350-900 series, these proposed special conditions reflect the knowledge gained from those programs and therefore have some differences in wording from prior Airbus special conditions, even though the overall intent of the proposed special conditions is essentially the same.

### **Type Certification Basis**

Under Title 14, Code of Federal Regulations (14 CFR) 21.17, Airbus must show that the A350-900 series airplane meets the applicable provisions of 14 CFR part 25, as amended by Amendments 25-1 through 25-128.

If the Administrator finds that the applicable airworthiness regulations (i.e., 14 CFR part 25) do not contain adequate or appropriate safety standards for the A350-900 series airplane because of a novel or unusual design feature, special conditions are prescribed under § 21.16.

Special conditions are initially applicable to the model for which they are issued. Should the type certificate for that model be amended later to include any other model that incorporates the same or similar novel or unusual design feature, the special conditions would also apply to the other model under § 21.101.

In addition to the applicable airworthiness regulations and special conditions, the A350-900 series must comply with the fuel vent and exhaust emission requirements of 14 CFR part 34

and the noise certification requirements of 14 CFR part 36. The FAA must also issue a finding of regulatory adequacy under § 611 of Public Law 92-574, the "Noise Control Act of 1972."

The FAA issues special conditions, as defined in 14 CFR 11.19, under § 11.38, and they become part of the type-certification basis under § 21.17(a)(2).

### **Novel or Unusual Design Features**

The Airbus A350-900 series will incorporate the following novel or unusual design features: two separate Crew Rest Compartments in the overhead area accessible from the main deck. The FCRC is intended to be occupied by flight crew members only, and a CCRC is intended to be occupied by cabin crew members only. These compartments are unique to part 25 because of their design, location, and use on the airplane. Because of the novel or unusual features associated with installation of these compartments, special conditions are considered necessary to provide a level of safety equal to that established by the airworthiness regulations.

### **Discussion**

Compliance with these special conditions does not ensure that the applicant has demonstrated compliance with the requirements of 14 CFR part 91, 121 or 135.

In order to obtain an operational evaluation, the type design holder must contact the appropriate Aircraft Evaluation Group (AEG) in the Flight Standards Service and request an evaluation for operational suitability of the flight crew sleeping quarters in their crew rest facility. Results of these evaluations should be documented and appended to the A350 Flight Standardization Board (FSB) Report. Individual operators may reference these standardized evaluations in discussions with their FAA Principal Operating Inspector (POI) as the basis for an operational approval, in lieu of an on-site operational evaluation.

Any changes to the approved overhead crew rest compartment configuration that affect crewmember emergency egress or any other procedures affecting the safety of the occupying crewmembers and/or related training shall require a re-evaluation and approval. The applicant for a crew rest design change that affects egress, safety procedures, or training is responsible for notifying the FAA's AEG that a new crew rest facility evaluation is required.

Procedures must be developed to assure that a crewmember entering the overhead crew rest compartment through the vestibule to fight a fire will examine the vestibule and the lavatory areas for the source of the fire prior to entering the remaining areas of the crew rest compartment. These procedures are intended to assure that the source of the fire is not between the crewmember and the primary exit. In the event a fire source is not immediately self-evident to the firefighter, the firefighter should check for potential fire sources at areas closest to the primary exit first, then proceed to check areas in such a manner that the fire source, when found, would not be between the firefighter and the primary exit. Procedures describing methods to search the overhead crew rests for fire source(s) must be transmitted to the operator for incorporation into their training programs and appropriate operational manuals.

### **Applicability**

As discussed above, these special conditions apply to the A350-900 series airplanes. Should Airbus apply later for a change to the type certificate to include another model incorporating the same novel or unusual design feature, the special conditions would apply to that model as well.

## **Conclusion**

This action affects only certain novel or unusual design features on the Airbus A350-900 series airplanes. It is not a rule of general applicability.

## **List of Subjects in 14 CFR Part 25**

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

The authority citation for these special conditions is as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701, 44702, 44704.

## **The Proposed Special Conditions**

Accordingly, the Federal Aviation Administration (FAA) proposes the following special conditions as part of the type certification basis for Airbus A350-900 series airplanes.

1. Occupancy of the overhead crew rest compartment is limited to the total number of installed bunks and seats in each compartment, and is not allowed for taxi, takeoff and landing. There must be an approved seat or berth able to withstand the maximum flight loads when occupied for each occupant permitted in the overhead crew rest compartment. In addition, the maximum occupancy in the overhead crew rest compartment may be limited as necessary to provide the required level of safety.

(a) There must be appropriate placards, inside and outside each entrance to the overhead crew rest compartment to indicate:

- (1) The maximum number of occupants allowed,
- (2) That occupancy is restricted to crewmembers who are trained in the evacuation procedures for the overhead crew rest compartment,

- (3) That occupancy is prohibited during taxi, take-off and landing
- (4) That smoking is prohibited in the overhead crew rest compartment, and
- (5) That stowage in the crew rest compartment area is limited to crew personal luggage.

The stowage of cargo or passenger baggage is not allowed.

- (b) There must be at least one ashtray on the inside and outside of any entrance to the overhead crew rest compartment.
- (c) There must be a means to prevent passengers from entering the overhead crew rest compartment in the event of an emergency or when no flight attendant is present.
- (d) There must be a means for any door installed between the overhead crew rest compartment and passenger cabin to be capable of being quickly opened from inside the compartment, even when crowding occurs at each side of the door.
- (e) For all doors installed, there must be a means to preclude anyone from being trapped inside the overhead crew rest compartment. If a locking mechanism is installed, it must be capable of being unlocked from the outside without the aid of special tools. The lock must not prevent the compartment from being opened from the inside at any time.
- (f) The means of opening doors and hatches to the overhead crew rest compartment must be simple and obvious. In addition, doors or hatches that separate the overhead crew rest compartment from the main deck must not adversely affect evacuation of occupants on the main deck (slowing evacuation by encroaching into aisles in a way that is not easily reversible, for example) or cause injury to those occupants during opening or while opened.

2. There must be at least two emergency evacuation routes, which could be used by each occupant of the overhead crew rest compartment to evacuate rapidly to the main cabin.
- (a) The routes must also be able to be closed from the main passenger cabin after evacuation. In addition, the routes must be located with sufficient separation within the overhead crew rest compartment to minimize the possibility of an event either inside or outside of the crew rest compartment which would render both routes inoperative.

Compliance to the requirements of proposed special condition no. 2. may be shown by inspection or by analysis. Regardless which method is used, the maximum acceptable exit separation is 60 feet measured between exit openings.

#### **Compliance by Inspection**

An overhead crew rest compartment less than 60 feet in length in which the evacuation routes are located such that each occupant of the seats and berths has an unobstructed route to at least one of the evacuation routes regardless of the location of a fire would be acceptable by inspection. A fire within a berth that only blocks the occupant of that berth from exiting the berth need not be considered. Therefore, exits which are located at absolute opposite ends (i.e., adjacent to opposite end walls) of the crew rest would require no further review or analysis with regard to exit separation.

#### **Compliance by Analysis**

Analysis must show the overhead crew rest compartment configuration and interior features provide for all occupants of the overhead crew rest to escape the compartment in the event of a hazard inside or outside of the compartment. Elements to consider in this evaluation are as follows:

- (1) Fire inside or outside the overhead crew rest compartment considered separately and the design elements used to reduce the available fuel for the fire,
- (2) Design elements to reduce the fire ignition sources in the overhead crew rest compartment,
- (3) Distribution and quantity of emergency equipment within the overhead crew rest compartment,
- (4) Structural failure or deformation of components that could block access to the available evacuation routes (e.g., seats, folding berths, contents of stowage compartments, etc),
- (5) An incapacitated person blocking the evacuation routes,
- (6) Any other foreseeable hazard not identified above that could cause the evacuation routes to be compromised.

Analysis must consider design features affecting access to the evacuation routes. The design features that should be considered include, but are not limited to, seat-back break-over, the elimination of rigid structure that reduces access from one part of the compartment to another, the elimination of items that are known to be the cause of potential hazards, the availability of emergency equipment to address fire hazards, the availability of communications equipment, supplemental restraint devices to retain items of mass that could hinder evacuation if broken loose, and load path isolation between components that contain the evacuation routes.

Analysis of the fire threats should be used in determining the placement of required fire extinguishers and protective breathing equipment (PBEs) and should consider the possibility of fire in any location in the overhead crew rest compartment. The location and quantity of PBEs

and fire extinguishers should allow occupants located in any approved seats or berths access to the equipment necessary to fight a fire in the overhead crew rest compartment.

The intent of this proposed special condition is to provide sufficient exit separation. The exit separation analysis described above should not be used to approve exits which have less physical separation (measured between the centroid of each exit opening) than the minimums prescribed below, unless compensating features are identified and submitted to the FAA for evaluation and approval.

For overhead crew rest compartments with one exit located near the forward or aft end of an overhead crew rest compartment, as measured by having the centroid of the exit opening within 20 percent of the forward or aft end of the total overhead crew rest compartment length, the exit separation should not be less than 50 percent of the total overhead crew rest compartment length.

For overhead crew rest compartments with neither required exit located near the forward or aft end of the overhead crew rest compartment, as measured by not having the centroid of either exit opening within 20 percent of the forward or aft end of the total overhead crew rest compartment length, the exit separation should not be less than 30 percent of the total overhead crew rest compartment length.

(b) The routes must be designed to minimize the possibility of blockage, which might result from fire, mechanical or structural failure, or persons standing below or against the escape route. One of the evacuation routes should not be located where normal movement by passengers, such as in the main aisle, cross aisle or galley complex, would impede egress from the overhead crew rest compartment when it is occupied. If an evacuation route utilizes an area where normal

movement of passengers occurs, it must be demonstrated that passengers would not impede egress to the main deck. If there is low headroom at or near the evacuation route, provisions must be made to prevent or to protect occupants of the overhead crew rest compartment from head injury. The use of evacuation routes must not be dependent on any powered device. If the evacuation path is over an area where there are passenger seats, a maximum of five passengers may be displaced from their seats temporarily during the evacuation process of an incapacitated person(s). If the evacuation procedure involves the evacuee stepping on seats, the seats must not be damaged to the extent that they would not be acceptable for occupancy during an emergency landing.

(c) Emergency evacuation procedures, including the emergency evacuation of an incapacitated occupant from the overhead crew rest compartment, must be established. All of these procedures must be transmitted to the operator for incorporation into their training programs and appropriate operational manuals.

(d) There must be a limitation in the Airplane Flight Manual or other suitable means requiring that crewmembers be trained in the use of all evacuation routes.

3. There must be a means for the evacuation of an incapacitated person, representative of a ninety-fifth percentile male, from the overhead crew rest compartment to the passenger cabin floor.

(a) The evacuation must be demonstrated for all evacuation routes. One person, e.g., a crewmember or assistant, within the overhead crew rest compartment may provide assistance in the evacuation. Additional assistance may be provided by up to three persons in the main

passenger compartment. These additional assistants must be standing on the floor while providing assistance.

(b) For evacuation routes having stairways, the additional assistants may ascend up to one half the elevation change from the main deck to the overhead crew rest compartment, or to the first landing, whichever is lower.

4. The following signs and placards must be provided in the overhead crew rest compartment:

(a) At least one exit sign meeting the requirements of § 25.812(b)(1)(i) must be located near each exit. One allowable exception is utilization of a sign with reduced background area of no less than 5.3 square inches (excluding the letters), provided that it is installed such that the material surrounding the exit sign is light in color (e.g., white, cream, light beige). If the material surrounding the exit sign is not light in color, a sign with a minimum of a one-inch wide background border around the letters would also be acceptable. Another allowable exception is a sign with a symbol that the FAA has determined to be equivalent for use as an exit sign in an overhead crew rest compartment.

(b) An appropriate placard located near each exit defining the location and the operating instructions for each evacuation route.

(c) Placards must be readable from a distance of 30 inches under emergency lighting conditions.

(d) The exit handles and evacuation path operating instruction placards must be illuminated to at least 160 microlamberts under emergency lighting conditions.

5. If the aircraft's main power system fails, or if the normal overhead crew rest compartment lighting system fails, there must be a means for emergency illumination to be automatically provided for the overhead crew rest compartment.

(a) This emergency illumination must be independent of the main lighting system.

(b) The sources of general cabin illumination may be common to both the emergency and the main lighting systems if the power supply to the emergency lighting system is independent of the power supply to the main lighting system.

(c) The illumination level must be sufficient for the occupants of the overhead crew rest compartment to locate and transfer to the main passenger cabin floor by means of each evacuation route.

6. There must be means for two-way voice communications between crewmembers on the flight deck and occupants of the overhead crew rest compartment. There must also be two-way communications between the occupants of the overhead crew rest compartment and each flight attendant station required to have a public address system microphone per § 25.1423(g) in the passenger cabin. In addition, the public address system must include provisions to provide only the relevant information to the flight crewmembers in the overhead crew rest compartment (e.g., fire in flight, aircraft depressurization, preparation of the compartment occupants for landing.).

7. There must be a means for manual activation of an aural emergency alarm system, audible during normal and emergency conditions, to enable crewmembers on the flight deck and at each pair of required floor level emergency exits to alert occupants of the overhead crew rest

compartment of an emergency situation. Use of a public address or crew interphone system will be acceptable, provided an adequate means of differentiating between normal and emergency communications is incorporated. The system must be powered in flight, after the shutdown or failure of all engines and auxiliary power units, for a period of at least ten minutes.

8. There must be a means, readily detectable by seated or standing occupants of the overhead crew rest compartment, which indicates when seat belts should be fastened. In the event there are no seats, at least one means must be provided to cover anticipated turbulence such as sufficient handholds. Seat belt type restraints must be provided for berths and must be compatible for the sleeping attitude during cruise conditions. There must be a placard on each berth requiring that seat belts must be fastened when occupied. If compliance with any of the other requirements of these special conditions is predicated on specific head location, there must be a placard identifying the head position.

9. In lieu of the requirements specified in § 25.1439(a) that pertain to isolated compartments and to providing a level of safety equivalent to that for occupants of an isolated galley, the following equipment must be provided in the overhead crew rest compartment:

- (a) At least one approved hand-held fire extinguisher appropriate for the kinds of fires likely to occur,
- (b) Two Protective Breathing Equipment (PBE) devices approved to Technical Standard Order (TSO)-C116 or equivalent, suitable for firefighting, or one PBE for each hand-held fire extinguisher, whichever is greater, and

(c) One flashlight.

Note: Additional PBEs and fire extinguishers in specific locations, beyond the minimum numbers prescribed in Special Condition No. 9 may be required as a result of the egress analysis accomplished to satisfy Special Condition No. 2(a).

10. A smoke or fire detection system or systems must be provided that monitors each occupiable area within the overhead crew rest compartment, including those areas partitioned by curtains.

Flight tests must be conducted to show compliance with this requirement. Each system or systems must provide:

- (a) A visual indication to the flightdeck within one minute after the start of a fire;
- (b) An aural warning in the overhead crew rest compartment; and
- (c) A warning in the main passenger cabin. This warning must be readily detectable by a flight attendant, considering the positioning of flight attendants throughout the main passenger compartment during various phases of flight.

11. The overhead crew rest compartment must be designed such that fires within the compartment can be controlled without a crewmember having to enter the compartment, or the design of the access provisions must allow crewmembers equipped for firefighting to have unrestricted access to the compartment. The time for a crewmember on the main deck to react to the fire alarm, to don the firefighting equipment, and to gain access must not exceed the time for the compartment to become smoke-filled, making it difficult to locate the fire source.

Procedures describing methods to search the overhead crew rests for fire sources(s) must be

established. These procedures must be transmitted to the operator for incorporation into their training programs and appropriate operational manuals.

12. There must be a means provided to exclude hazardous quantities of smoke or extinguishing agent originating in the overhead crew rest compartment from entering any other compartment occupied by crewmembers or passengers. This means must include the time periods during the evacuation of the overhead crew rest compartment and, if applicable, when accessing the overhead crew rest compartment to manually fight a fire. Smoke entering any other compartment occupied by crewmembers or passengers when the access to the overhead crew rest compartment is opened, during an emergency evacuation, must dissipate within five minutes after the access to the overhead crew rest compartment is closed. Hazardous quantities of smoke may not enter any other compartment occupied by crewmembers or passengers during subsequent access to manually fight a fire in the overhead crew rest compartment (the amount of smoke entrained by a firefighter exiting the overhead crew rest compartment through the access is not considered hazardous). During the one-minute smoke detection time, penetration of a small quantity of smoke from the overhead crew rest compartment into an occupied area is acceptable. Flight tests must be conducted to show compliance with this requirement.

There must be a provision in the firefighting procedures to ensure that all door(s) and hatch(es) at the crew rest compartment outlets are closed after evacuation of the crew rest compartment and during firefighting to minimize smoke and extinguishing agent from entering other occupiable compartments.

If a built-in fire extinguishing system is used in lieu of manual firefighting, then the fire extinguishing system must be designed so that no hazardous quantities of extinguishing agent will enter other compartments occupied by passengers or crew. The system must have adequate capacity to suppress any fire occurring in the overhead crew rest compartment, considering the fire threat, volume of the compartment, and the ventilation rate.

13. There must be a supplemental oxygen system within the crew rest compartment as follows:

- (a) There must be at least one mask for each seat and for each berth in the crew rest compartment.
- (b) If a destination area, such as a changing area, is provided in the overhead crew rest compartment, there must be an oxygen mask readily available for each occupant that can reasonably be expected to be in the destination area. The maximum number of required masks within the destination area is limited to the placarded maximum occupancy of the crew rest.
- (c) There must also be an oxygen mask readily accessible to each occupant that can reasonably be expected to be either transitioning from the main cabin into the crew rest compartment, transitioning within the crew rest compartment, or transitioning from the crew rest compartment to the main cabin.
- (d) The system must provide an aural and visual alert to warn the occupants of the overhead crew rest compartment to don oxygen masks if there is a decompression. The aural and visual alerts must activate concurrently with the deployment of the oxygen masks in the passenger cabin. To compensate for sleeping occupants, the aural alert must be heard in each section of the overhead crew rest compartment and must sound continuously for a minimum of five minutes or

until a reset switch within the overhead crew rest compartment is activated. A visual alert that informs occupants that they must don an oxygen mask must be visible in each section.

(e) There must also be a means by which the oxygen masks can be manually deployed from the flight deck.

(f) Decompression procedures for crew rest occupants must be established. These procedures must be transmitted to the operator for incorporation into their training programs and appropriate operational manuals.

(g) The supplemental oxygen system for the crew rest shall meet the same 14 CFR part 25 regulations as the supplemental oxygen system for the passenger cabin occupants except for the 10 percent additional masks requirement of § 25.1447(c)(1).

(h) The illumination level of the normal overhead crew rest compartment lighting system must automatically be sufficient for each occupant of the compartment to locate a deployed oxygen mask.

14. The following requirements apply to overhead crew rest compartments that are divided into sections by curtains or partitions:

(a) A placard is required adjacent to each curtain that visually divides or separates, for privacy purposes, the overhead crew rest compartment into small sections. The placard must require that the curtain(s) remains open when the private section it creates is unoccupied. The vestibule section adjacent to the stairway is not considered a private area and, therefore, does not require a placard.

(b) For each section of the overhead crew rest compartment created by a curtain, the following requirements of these special conditions must be met with the curtain open or closed:

- (1) No smoking placard (Special Condition No. 1),
- (2) Emergency illumination (Special Condition No. 5),
- (3) Emergency alarm system (Special Condition No. 7),
- (4) Seat belt fasten signal or return to seat signal as applicable (Special Condition No. 8),
- (5) The smoke or fire detection system (Special Condition No. 10), and
- (6) The oxygen system (Special Condition No. 13).

(c) Overhead crew rest compartments visually divided to the extent that evacuation could be affected must have exit signs that direct occupants to the primary stairway exit. The exit signs must be provided in each separate section of the overhead crew rest compartment, except for curtained bunks, and must meet the requirements of § 25.812(b)(1)(i). An exit sign with reduced background area or a symbolic exit sign as described in Special Condition No. 4(a) may be used to meet this requirement.

(d) For sections within an overhead crew rest compartment with a rigid partition with a door physically separating the sections, the following requirements of these special conditions must be met with the door open or closed:

- (1) There must be a secondary evacuation route from each section to the main deck, or alternatively, it must be shown that any door between the sections has been designed to preclude anyone from being trapped inside the compartment. Removal of an incapacitated occupant within this area must be considered. A secondary evacuation route from a small room designed for only one occupant for short time duration, such as a changing area or lavatory, is not

required. However, removal of an incapacitated occupant from a small room, such as a changing area or lavatory, must be considered.

(2) Any door between the sections must be shown to be openable when crowded against, even when crowding occurs at each side of the door.

(3) There may be no more than one door between any seat or berth and the primary stairway exit.

(4) There must be exit signs in each section meeting the requirements of § 25.812(b)(1)(i), or shown to have an Equivalent Level of Safety, that direct occupants to the primary stairway exit.

An exit sign with reduced background area or a symbolic exit sign as described in Special Condition No. 4(a) may be used to meet this requirement.

(e) For each smaller section within the main overhead crew rest compartment created by the installation of a partition with a door, the following requirements of these special conditions must be met with the door open or closed:

(1) No smoking placards (Special Condition No. 1);

(2) Emergency illumination (Special Condition No. 5);

(3) Two-way voice communication (Special Condition No. 6);

(4) Emergency alarm system (Special Condition No. 7);

(5) Seat belt fasten signal or return to seat signal as applicable (Special Condition No. 8);

(6) Emergency firefighting and protective equipment (Special Condition No. 9);

(7) Smoke or fire detection system (Special Condition No. 10), and

(8) The oxygen system (Special Condition No. 13).

15. The requirements of two-way voice communication with the flight deck and provisions for emergency firefighting and protective equipment are not applicable to lavatories or other small areas that are not intended to be occupied for extended periods of time.

16. Where a waste disposal receptacle is fitted, it must be equipped with an automatic fire extinguisher that meets the performance requirements of § 25.854(b).

17. Materials (including finishes or decorative surfaces applied to the materials) must comply with the flammability requirements of § 25.853(a) as amended by Amendment 25-116.

Mattresses must comply with the flammability requirements of § 25.853(c), as amended by Amendment 25-116.

18. The addition of a lavatory within the overhead crew rest compartment would require the lavatory to meet the same requirements as those for a lavatory installed on the main deck except with regard to Special Condition No. 10 for smoke detection.

19. Each stowage compartment in the crew rest compartment, except for underseat compartments for occupant convenience, must be completely enclosed. All enclosed stowage compartments within the overhead crew rest compartment that are not limited to stowage of emergency equipment or airplane supplied equipment such as bedding must meet the design criteria given in the table below. Enclosed stowage compartments greater than 200 ft<sup>3</sup> in interior volume are not addressed by this special condition. The in-flight accessibility of very large

enclosed stowage compartments and the subsequent impact on the crewmembers' ability to effectively reach any part of the compartment with the contents of a hand fire extinguisher will require additional fire protection considerations similar to those required for inaccessible compartments such as Class C cargo compartments.

	<b>STOWAGE COMPARTMENT INTERIOR VOLUMES</b>	
Fire Protection Features	less than 25 cubic feet	25 cubic feet to 200 cubic feet
Materials of Construction <sup>1</sup>	Yes	Yes
Detectors <sup>2</sup>	No	Yes
Liner <sup>3</sup>	No	Yes
Locating Device <sup>4</sup>	No	Yes

<sup>1</sup>Material

The material used to construct each enclosed stowage compartment must at least be fire resistant and must meet the flammability standards established for interior components of § 25.853. For compartments less than 25 ft<sup>3</sup> in interior volume, the design must ensure the ability to contain a fire likely to occur within the compartment under normal use.

<sup>2</sup>Detectors

Enclosed stowage compartments equal to or exceeding 25 ft<sup>3</sup> in interior volume must be provided with a smoke or fire detection system to ensure that a fire can be detected within a one-minute detection time. Flight tests must be conducted to show compliance with this requirement. Each system (or systems) must provide:

- (a) A visual indication in the flight deck within one minute after the start of a fire,
- (b) An aural warning in the overhead crew rest compartment, and

(c) A warning in the main passenger cabin. This warning must be readily detectable by a flight attendant and consider the position of flight attendants throughout the main passenger compartment during various phases of flight.

### <sup>3</sup>Liner

If it can be shown that the material used to construct the stowage compartment meets the flammability requirements of a liner for a Class B cargo compartment (i.e., § 25.855 at Amendment 25-116, and Appendix F, part I, paragraph (a)(2)(ii)), then no liner is required for enclosed stowage compartments equal to or greater than 25 ft<sup>3</sup> in interior volume but less than 57 ft<sup>3</sup> in interior volume. For all enclosed stowage compartments equal to or greater than 57 ft<sup>3</sup> in interior volume but less than or equal to 200 ft<sup>3</sup>, a liner must be provided that meets the requirements of § 25.855 for a Class B cargo compartment.

### <sup>4</sup>Locating Device

Overhead crew rest compartments which contain enclosed stowage compartments exceeding 25 ft<sup>3</sup> interior volume and which are located away from the entry to the overhead crew rest compartment require additional fire protection features and/or devices to assist the firefighter in determining the location of a fire.

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